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Lichens of Ordu Province, Turkey

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Abstract – 314 taxa belonging to 99 genera are reported from Ordu province in the Central Black Sea region of Turkey. 263 taxa are reported for the first time from the province, and three species, *Arthopyrenia persoonii*, *Sphinctrina leucopodia,* and *Verrucaria submersella*, are new records for Turkey. The full checklist is available on http://www.mycotaxon.com/resources/weblists.html

Key words – Aydoğan hill, biota, biodiversity

Introduction

In the last two decades lichenological studies in Turkey have increased remarkably (e.g., Candan & Özdemir Türk 2008, Halıcı & Aksoy 2009, John & Nimis 1998, Kınalıoğlu 2009, Özdemir Türk 2003, Öztürk et al. 2005, Yazici & Aptroot 2008). However, the lichen composition of some provinces is still insufficiently known. One of these provinces is Ordu, situated in the central part of the Black Sea region of Turkey (Fig. 1). There have been four studies referring to lichens in Ordu province (Steiner 1909, Kınalıoğlu et al. 1998, John et al. 2000, Aslan et al. 2006). In these studies, a total of only 94 lichen taxa are cited from the province, suggesting that its lichen biota is very poorly known. The present study adds further information to our knowledge of the lichen biota of Turkey and in particular of Ordu.

Data here are compiled from Ordu, based on collections from 63 sites visited between 20 March 2004 and 2 November 2008. Turkey has three main floristic regions: the Euro-Siberian floristic region, the Mediterranean floristic region, and the Irano-Turanian floristic region. Ordu is located within the boundaries of the Euxianian section of the Euro-Siberian floristic region. It is situated at 40°18'–41°08' N, 36°52'–38°12' E at altitudes ranging from sea level to 3038 m. The province has an area of 6001 km^2, generally of rough topography. The most important peaks of Ordu are Kırgızlar peak (3038 m), Aşıt peak (2569 m), Eriço peak (2298 m), Deveci Mountain (1907 m), and Aydoğan peak

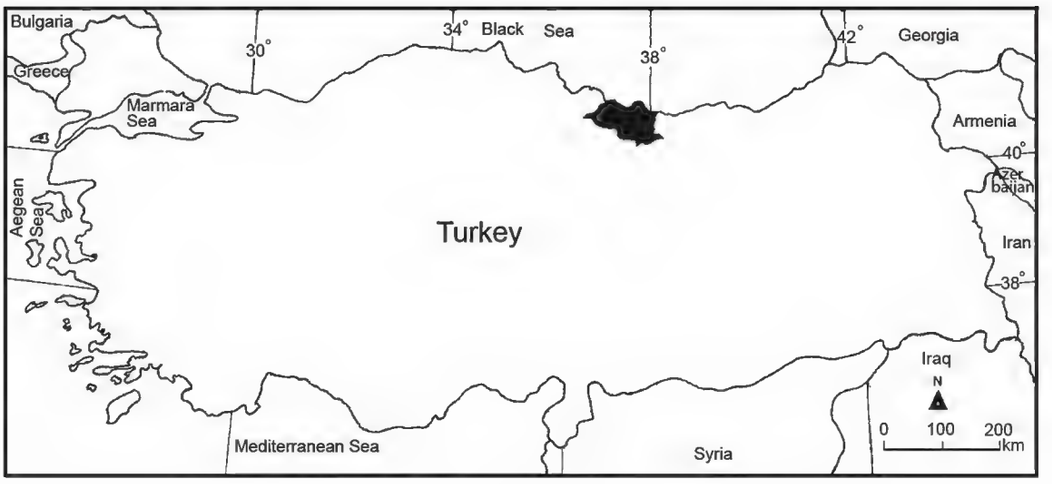

Fig. 1. Map of Turkey showing Ordu province.

(1971 m). There are also some facies plateaux at high altitudes, mainly Çambaşı, Perşembe, Keyfalan, Topçam, Argan, and Aydoğan. Upper Cretaceous volcanic facies (agglomerata, dacite, diorite, granodiorit) are mostly present. There are various big streams in the province such as Melet stream, Bülbül stream, and Civil stream. Small plains, which cover relatively minor areas, exist near the coastal area and stream mouths. The wide altitudinal variation, rough topography, influence of the adjacent sea, and big streams of the Ordu provide a wide range of climatic zones. However, oceanic climate prevails in Ordu. The mean rainfall per year is 1029.2 mm, the highest precipitations occur in October and December and the lowest in May and July. On average, there are 178 rainy days and 6 snowy days on a yearly basis. The mean annual maximum temperature is 27.5°C in August, while the mean minimum temperature is 3.9°C in February. The mean annual relative humidity is 76%. Vegetation cover varies with climate and altitude. Up to 1500 m, deciduous trees (*Alnus* spp., *Carpinus* spp., *Castanea sativa*, *Fagus orientalis*, *Quercus* spp.) and shrubs (e.g., *Corylus* spp., *Rhododendron* spp.) prevail. *Corylus* species are important crop plants as well. At 1500–1900 m the forest consists of *Picea orientalis* and *Pinus sylvestris* (Atalay 1994), which provide suitable habitats for a rich lichen flora. Above 1900 m alpine meadows are dominant.

Materials and methods

The collections were identified following standard techniques using various lichen guides (Brodo et al. 2001, Goward 1999, Purvis et al. 1992, Wasser 2005, Wirth 1995). Air-dried samples were examined using a stereo microscope and a light microscope. All samples are stored in the herbarium of the Faculty of Science and Arts, Giresun University, Giresun, Turkey. Lichen species new to Turkey are indicated by # in the Checklist, those new to Ordu province by *.

Results and discussion

Three of the lichen species in the Checklist are newly recorded for Turkey: *Arthopyrenia persoonii* A. Massal., *Sphinctrina leucopoda* Nyl., and *Verrucaria submersella* Servit are newly recorded for Turkey. *Arthopyrenia persoonii* might have been overlooked in Turkey in the past because of its inconspicuous appearance; the species, which colonizes the bark of deciduous trees such as *Fraxinus* sp. and *Juglans* sp. in Europe (Wirth 1994 & Berger et al.), was collected from the smooth bark of *Juglans regia.*

Sphinctrina leucopoda is pathogenic or commensalistic on *Pertusaria pertusa* (more rarely on other *Pertusaria* and *Diploschistes* species), in Europe and America particularly on old deciduous trees (Purvis et al. 1992); in Ordu it was lichenicolous on *Pertusaria pertusa* on *Corylus* sp. at 1080 m. *Verrucaria submersella,* which grows on wet noncalcareous rocks in the mountains of middle Europe (Ozenda & Clauzade 1970, Clauzade & Roux 1985), seems restricted to the stream banks at altitudes >1800 m. *Ionaspis lacustris* and *Usnea intermedia* are recorded for the second time from Turkey. *Ionaspis lacustris* is known throughout Europe and North America (Purvis et al. 1992) and in Europe is mainly found in the mediterranean mountain regions. In Turkey, it has been previously recorded from Akşehir (Steiner 1916). *Usnea intermedia* is known from Europe often on coniferous trees in submontane environments (Randlane et al. 2009); in Turkey, it was previously recorded from Bursa (Verseghy 1982).

The richness of geographical features of the Ordu (wide altitudinal range, rough topography and maritime influence) offers a wide range of niches so that a rich lichen biodiversity can be expected. Furthermore, due to the ecological features of the province, lichen species distributed elsewhere in Europe, America, and Asia co-occur with local lichens, leading to a rich lichen diversity. The number of known lichen taxa in Ordu, including records from the present study, is now 357. However, additional studies are necessary to extend the knowledge of the Ordu lichen biota, with the inner parts of the province particularly poorly explored.

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Literature cited

Aslan A, Budak G, Tıraşoğlu E, Karabulut A. 2006. Determination of elements in some lichens growing in Giresun and Ordu province (Turkey) using energy dispersive X-ray fluorescence spectrometry. Journal of Quantitative Spectroscopy and Radiative Transfer 97: 10–19.

Atalay İ. 1994. Türkiye Vejetasyon Coğrafyası. Ege Üniversitesi Basımevi, Bornova, İzmir.

Berger F, Priemetzhofer F, Türk R. 1998. Neue und seltene Flechten und lichenicole Pilze aus Oberösterreich, Österreich IV. Beitr. Naturk. Oberösterreichs 6: 397–416.

Brodo IM, Sharnoff SD, Sharnoff S. 2001. Lichens of North America. Yale University Press, London.

Candan M, Özdemir Türk A. 2008. Lichens of Malatya, Elaziğ and Adıyaman provinces (Turkey). Mycotaxon 105: 19–22.

Clauzade G, Roux C. 1985. Likenoj de Okcidenta Europo. Ilustrita Determinlibro. Bulletin de la Societe Botanique du Centre-Ouest, Nouvelle Serie, Numero Special 7. Royan, France.

Goward T. 1999. The lichens of British Columbia, Illustrated keys, Part 2, Fruticose Species. British Columbia Ministry of Forests.

Halıcı MG, Aksoy A. 2009. Lichenised and Lichenicolous Fungi of Aladağlar National Park (Niğde, Kayseri and Adana Provinces) in Turkey. Turk. J. Bot. 33: 169–189.

John V, Nimis PL. 1998. Lichen flora of Amanos mountain and the province of Hatay. Turk. J. Bot. 22: 257–267.

John V, Seaward MRD, Beaty JW. 2000. A neglected Lichen Collection from Turkey: Berkhamsted School Expedition 1971. Turk. J. Bot. 24: 239–248.

Kınalıoğlu K, Engin A, Gönülol A. 1998. Hoşgadem (Ordu-Aybastı) Yaylası Liken Florası Üzerine Bir Araştırma. 14. Ulusal Biyoloji Kongresi, Samsun, 476–483.

Kınalıoğlu K. 2009. Lichens from the Amasya, Çorum, and Tokat regions of Turkey. Mycotaxon 109: 181–184.

Özdemir Türk A. 2003. Two New Records For the Lichen Flora of Turkey. Turk. J. Bot. 27: 69–70.

Öztürk Ş, Güvenç Ş, Aydın S. 2005. Floristic Lichen Records from Isparta and Burdur Provinces. Turk. J. Bot. 29: 243–250.

Ozenda, P, Clauzade G. 1970: Les Lichens. Etude Biologique et Flore Illustree. Masson & Cie, Editeurs, Paris.

Purvis OW, Coppins BJ, Hawksworth DL, James PW, Moore DM. 1992. The Lichen Flora of Great Britain and Ireland. Natural History Museum & British Lichen Society, London.

Randlane T, Tõrra T, Saag A, Saag L. 2009. Key to European Usnea species. Bibliotheca Lichenologica, 100: 419 - 462.

Steiner, J. 1909. Lichenes. In: Handel Mazzetti DHFV. Ergebnisse einer botanischen Reise in das Pontische Randgebirge im Sandschak Trapezunt, etc. Annal. Naturhist. Hofmus. Wien 23: 107–123.

Steiner J. 1916. Aufzählung der von J. Börmüller im Oriente gesammelten Flechten. Anal. Naturhist. Mus. Wien 30: 24–39.

Verseghy KP. 1982. Beiträge zur Kenntnis der Turkischen Flechtenflora. Studia Botanica Hungarica 16: 53–65.

Wasser SP, Nevo E. 2005. Lichen-forming, Lichenicolous, and Allied Fungi of Israel. International Center for Cryptogamic Plants and Fungi, Institute of Evolution, University of Haifa, Israel.

Wirth V. 1995. Die Flechten Baden-Württembergs. Ulmer, Stuttgart.

Yazıcı K, Aptroot A. 2008. Corticolous lichens of the city of Giresun with descriptions of four species new to Turkey. Mycotaxon 105: 95–104.